

## INFLUENCE OF STORAGE CONDITIONS ON PHYSICO-CHEMICAL AND OXIDATIVE OF BEEF TALLOW

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### Abstract

Currently, there are numerous metabolic imbalances attributed on the one hand, reducing physical exertion, sedentary lifestyle, on the other hand application of nerve growth, increasing the daily stress and environmental pollution, food pollution implicitly. This is the way of this paper studies the chemical and physical changes aimed at placing the oxidative processes of bovine tallow.

**Key words:** fat, fatty acids, oxidative process, fat food, cattle

### INTRODUCTION

Fat energy play an important part in the body, enter into the cells, contribute to the absorption of fat soluble vitamins and serve as the source of these vitamins. It stimulates intestinal peristalsis, elimination of bile, pancreatic exocrine function, improve the taste of food [3,4].

Excessive consumption of food mostly fat, specially saturated fats led to health problems - increase blood cholesterol levels, formation of atheromatous plaques, increased blood pressure, increasing the number of patients with cardiac and circulatory disease.

Unsaturated fats are less hazardous and contain large amounts of fat-soluble vitamins, useful to body, which function as antioxidants in foods mainly in body fat and preventing many diseases caused by oxidative stress [4].

Among unsaturated fatty acids a great importance shows by linoleic, linolenic and arachidonic acids called essential fatty acids and can not be synthesized by the body, they must be brought in food intake. Brought by dietary essential fatty acids may be used by the body in the following areas: direct production of energy, to obtain the deposit of triglycerides, phospholipid constituents of membranes [1, 2].

The missing of essential fatty acids in the diet causes serious metabolic disorders like: growth retardation, dermatitis, hair loss, necrosis, kidney damage, accumulation of fat in the liver, reproductive disorders. (Nutritional Data, 1959, quoted by Barium, C. și colab., 1982).

## **MATERIAL AND METHODS**

Oxidation of food is responsible for degradation of sensory qualities, nutritional value and even the formation of toxic substances such as peroxides, which requires intimate knowledge of these processes and taking appropriate measures to avoid losses that can be recorded [53].

Fat food used in this study was obtained by melting the raw fat, gathered from the Romanian Spotted a female 8 years old, purchased from the slaughtering unit of Bihor county.

Sampling was done at the processing plant immediately after production, then melted and filtered.

They were portioned and packed in polythene bags nevacuumateto prevent direct contact with atmospheric oxygen and werestored under refrigeration (2 ... 4 ° C) and freezing (-15 ... 18 ° C ) seeking alterative installation process: hydrolysis and oxidation.

To assess the state of freshness during storage were determined: index of peroxide and Kreis reaction (aldehyde epihidrinică).

Measurements were made at intervals of one month for both types of fat : chilled and frozen until time for installation oxidative processes, beef tallow become unfit for people consum.

## **RESULTS AND DISCUSSION**

After the measurements made on beef tallow produced bymelting raw tallow collected from female race "Romanian Spotted" which was stored under refrigeration (2 ... 4 ° C) and freezing (-15 ...- 18 ° C) studied three sets of samples for each indicator in both methods of preservation (refrigeration, freezing) have shown significant changes in the physico-chemical composition and oxidative installation process. Results on oxidative changes of beef tallow during refrigerated storage are shown in Figure 1.

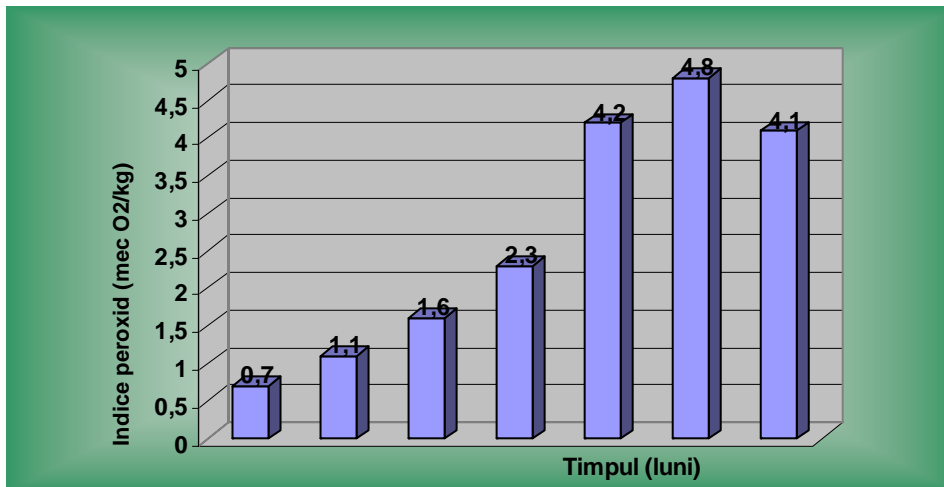


Fig. 1 Oxidative changes of beef tallow during refrigerated storage

Changes results on oxidative changes of beef tallow during frozen storage are shown in Figure 2.

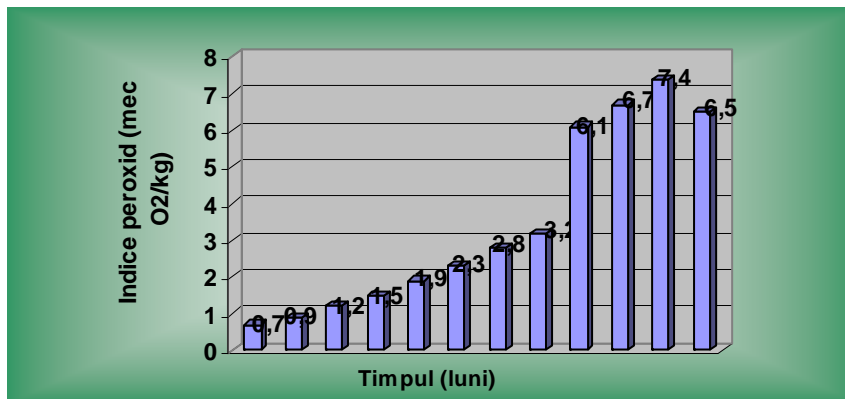


Fig. 2 Changes in peroxide value for tallow frozen

## CONCLUSIONS

Discussion and conclusions in part on changes during storage of beef tallow are:

-to assess the degree of freshness and intensity of the oxidation process were determined peroxide value as an indicator of incipient oxidation for chilled and tallow as an indicator of the presence of aldehyde oxidation epihidrinice

advanced, examinations performed at intervals of one month until positive Kreis reaction showed that when determining the installation of advanced oxidation process;

- During the first three months of refrigerated storage conditions has been a slow increase of the peroxide oxidation value of the corresponding opening round, followed by a corresponding surge propagation phase which forms the largest amount of hydroperoxides, reaching the 4.2 meq O/kg, then the index increased a little, and in six months the peroxide value decreases as a result of the split secondary hydroperoxides into compounds at this point is positive Kreis reaction indicating the presence of aldehyde epihidrinice and installation of advanced oxidation process;

- the first 7 months of storage under refrigeration conditions has been as low increase of the peroxide, which corresponds to the oxidation initiation phase, followed by a corresponding surge propagation phase formed the highest amount of peroxides 9 and 10 months growth is slow, and 11 months the peroxide value decreases due to split hydro peroxides in secondary compounds, at this point is positive Kreis reaction indicating the installation of advanced oxidation process.

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